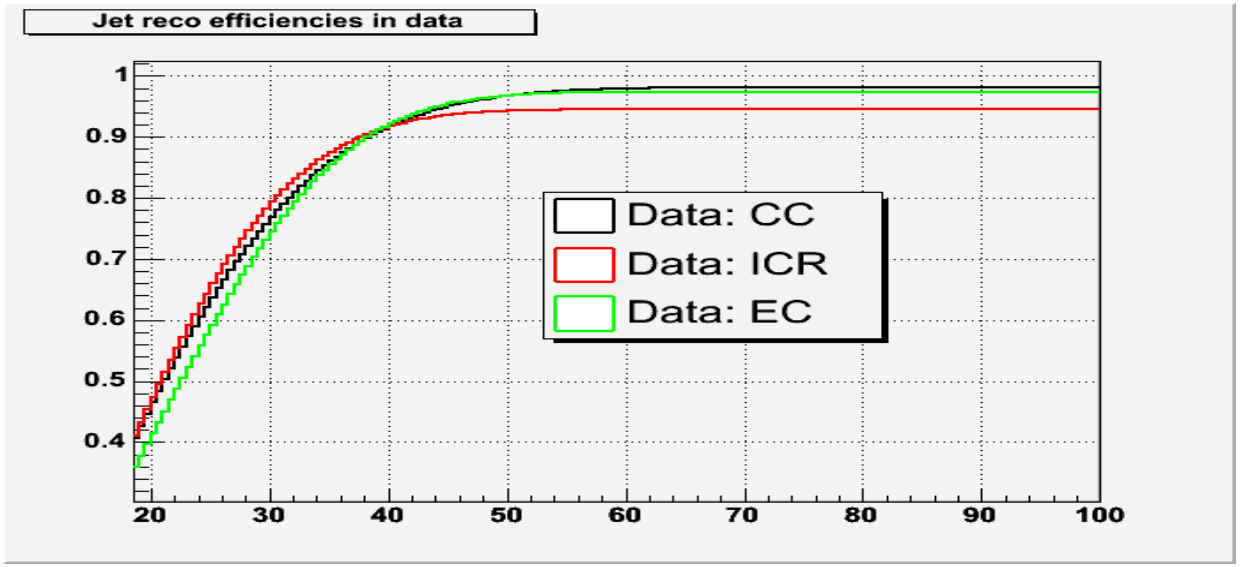
Unschmearing studies

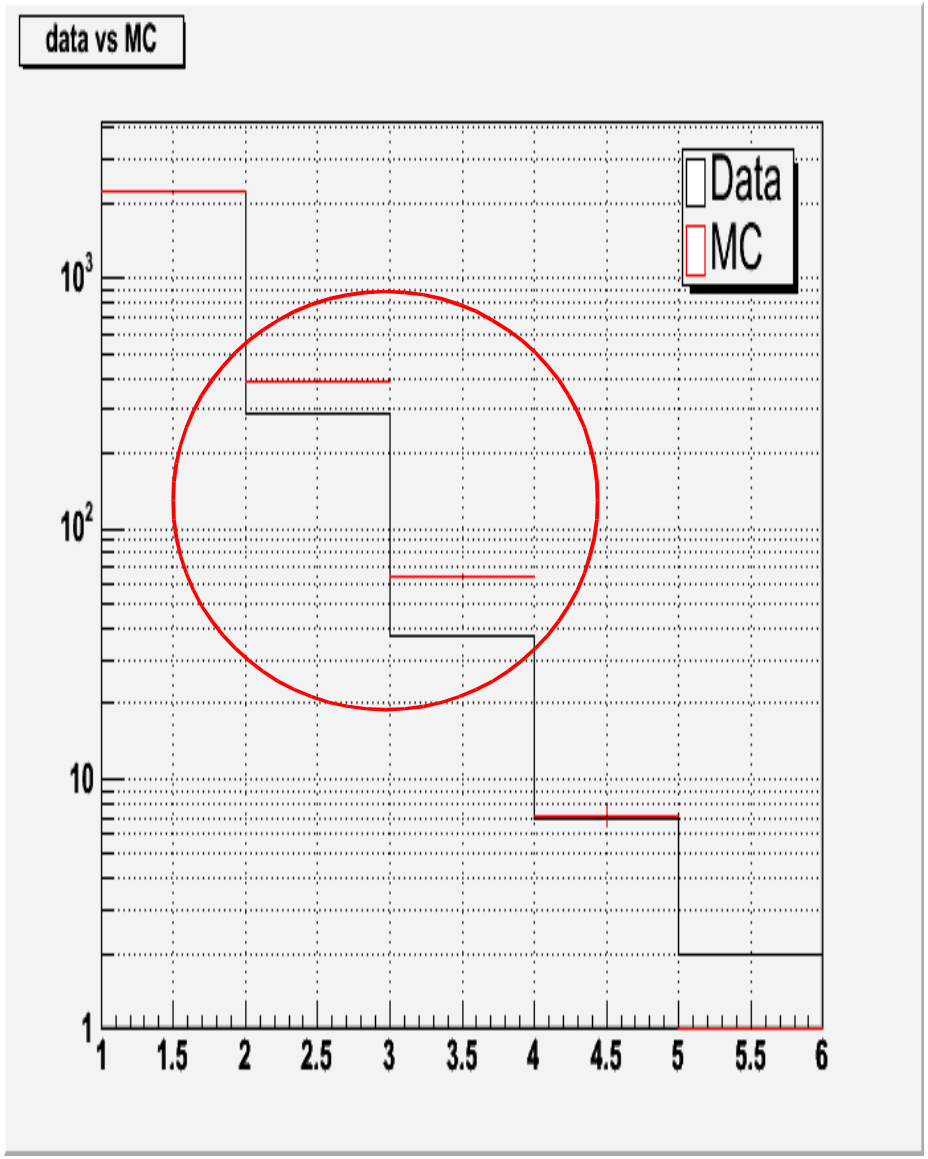
- Jet Sample 1: Particle level MC with data resolution and data jet reco efficiencies applied (with stable-parton-bug)
- Jet Sample 1*: Particle level MC with data resolution and data jet reco efficiencies applied (w/o stable-parton-bug)
- Jet Sample 2: CAL level MC with JES 5.3, EM inefficiency-, Z pT - corrections applied (plus intrinsic MC resolution and jet reco efficiencies)
- Jet Sample 3: Data – corrected of EM inefficiencies, background subtracted (plus intrinsic data resolution and jet reco efficiencies)

The following two slides are the original plots
that we've been looking at at the end of last week.
There is unexpected features (MC multiplicities
above data multiplicities, asymmetric jet eta) which
are due to a bug in my code (discovered by Suyong).
To apply the jet reco efficiencies I am using James'
'old' numbers:

p0 * Erf(p1 * x + p2 * x^(1/2) + p3 * x^(1/4)

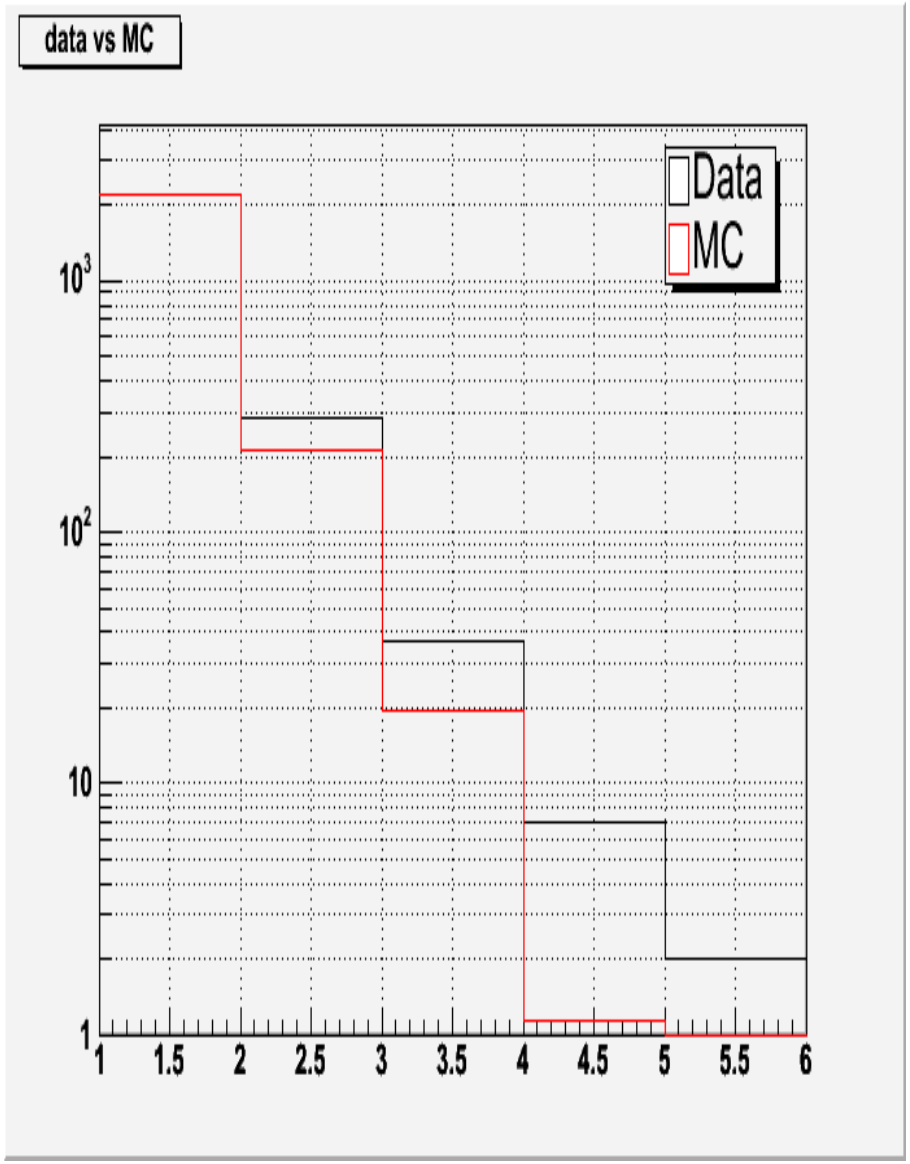
	p0	p1	p2	p3
data CC	0.9814	4.283*10^-2	7.623*10^-2	-0.3541
data ICR	0.9454	7.321*10^-2	-0.2149	-1.161*10^-2
data FWD	0.9739	0.1041	-0.7919	0.8777





MC: Jet sample 1

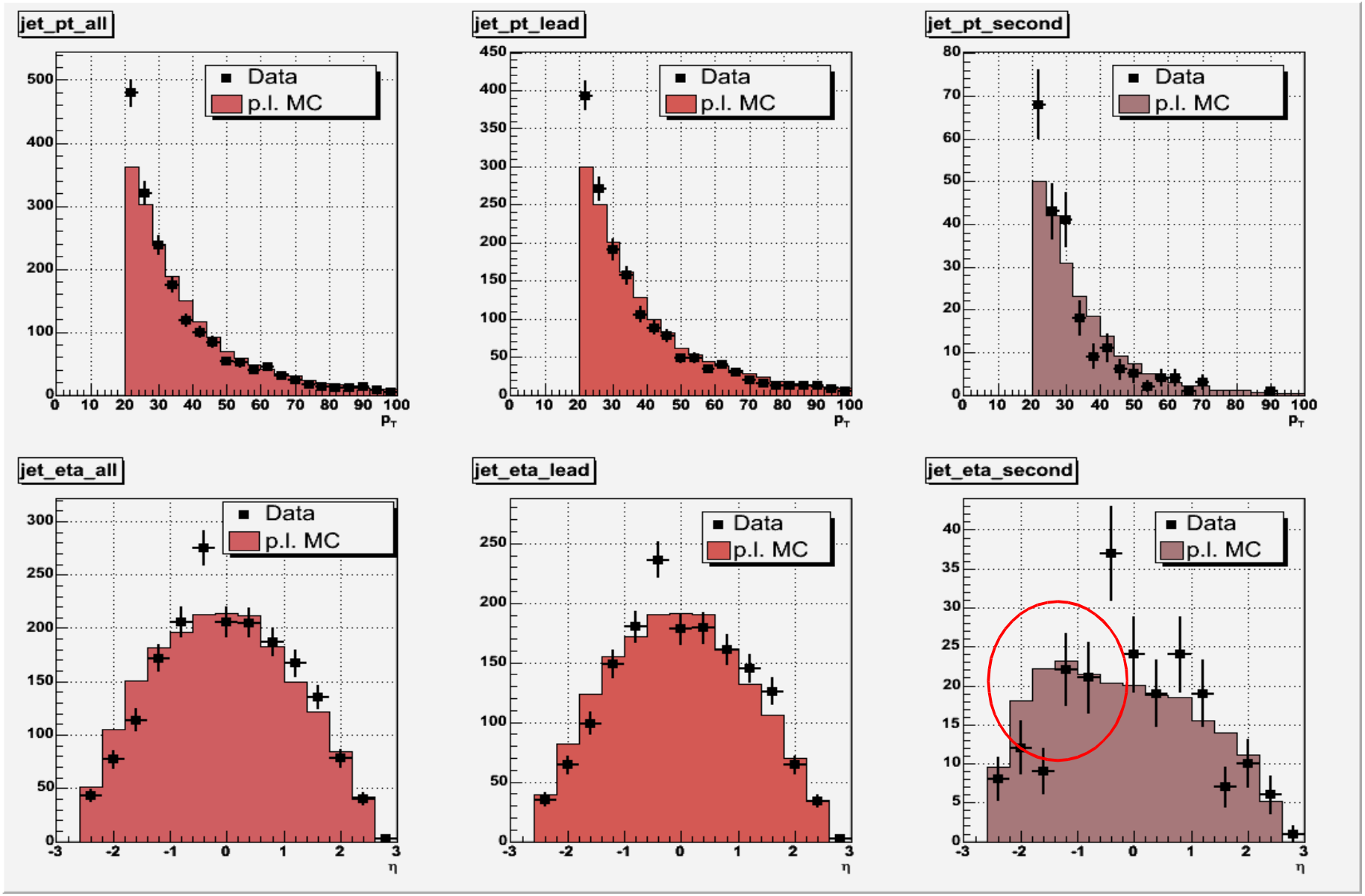
Data: Jet sample 3



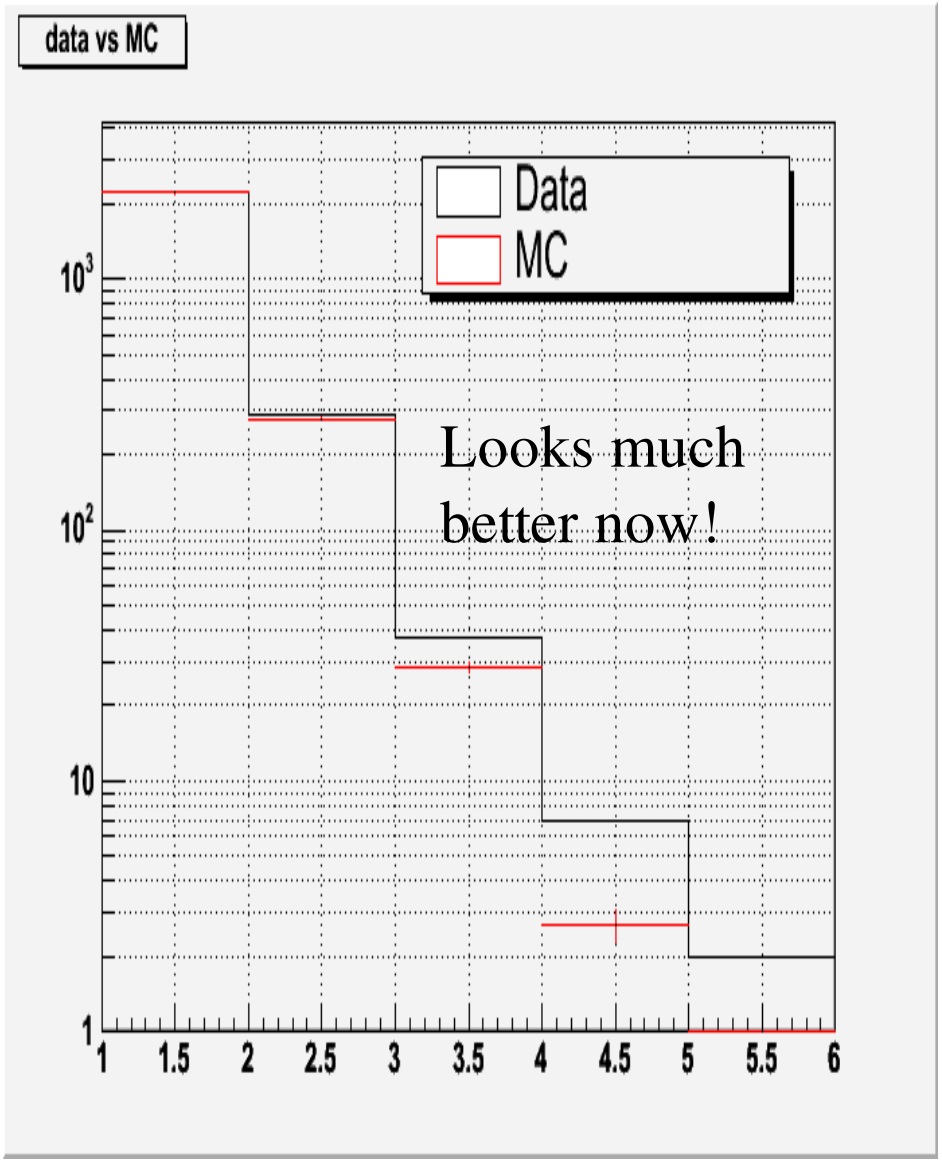
MC: Jet sample 2

Data: Jet sample 3

Jet sample 1 vs jet sample 3

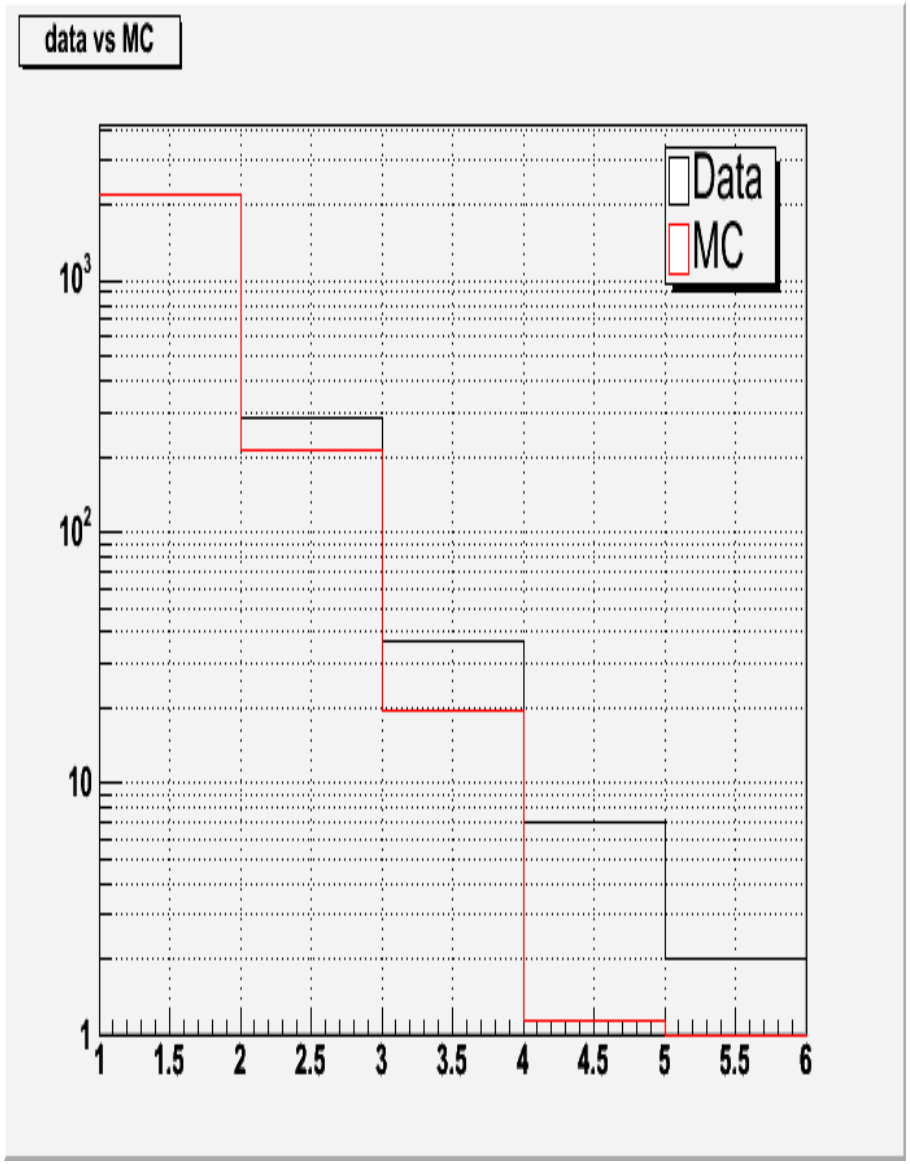


Now redoing the same sequence of plots,
this time fixing my bug in the stable-parton-bug work-around.
Same jet reco parameterization as before.



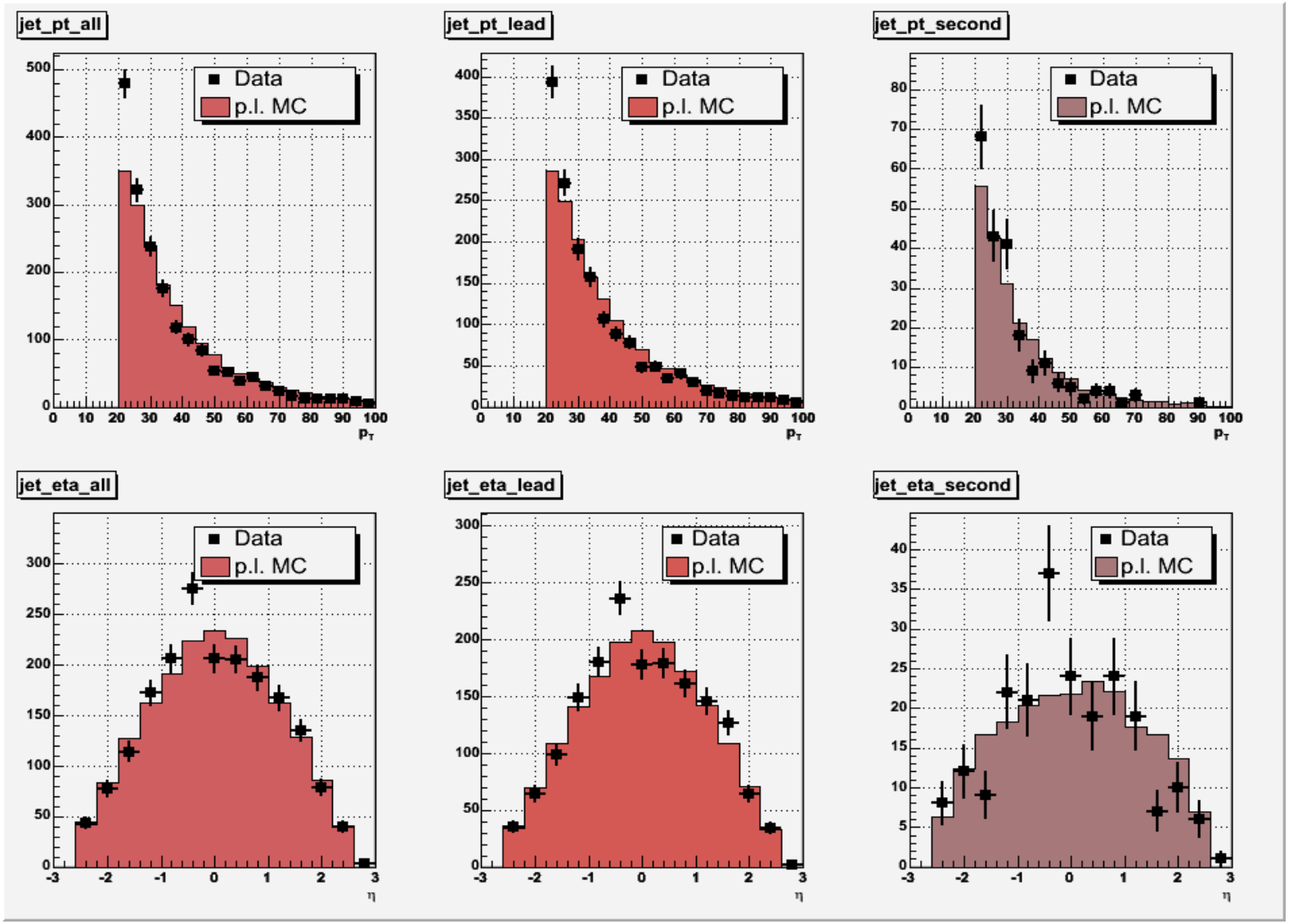
MC: Jet sample 1

Data: Jet sample 3



MC: Jet sample 2

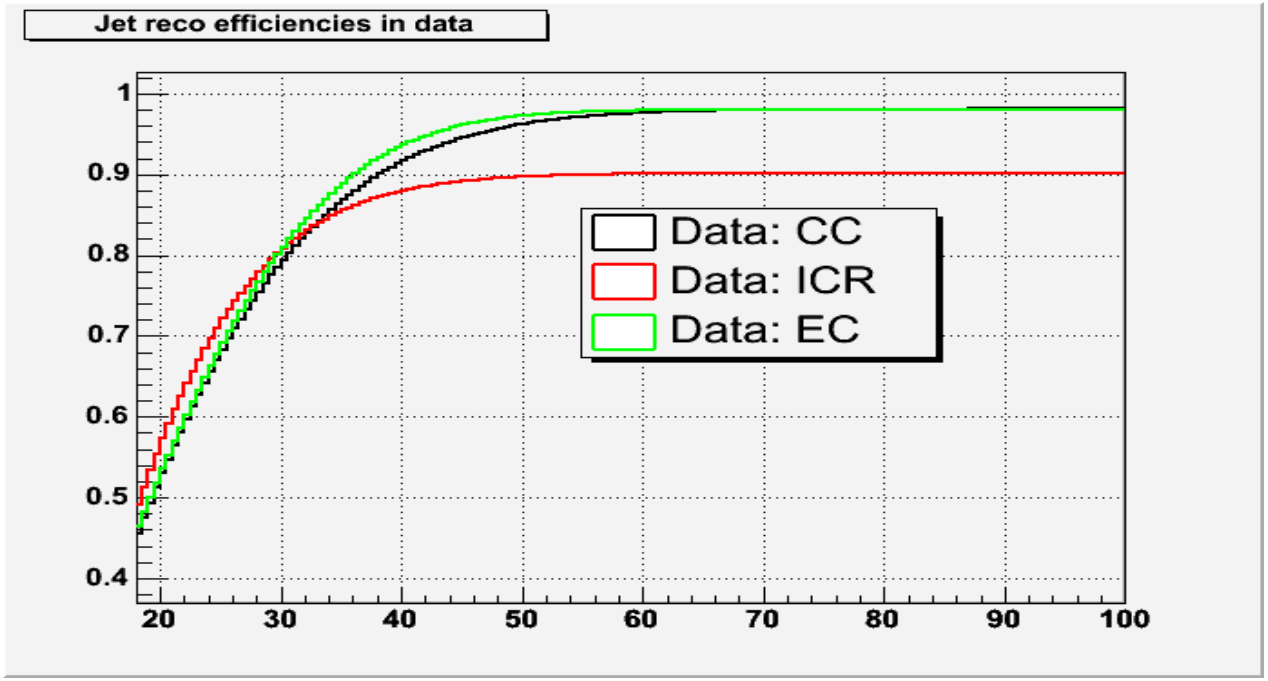
Data: Jet sample 3

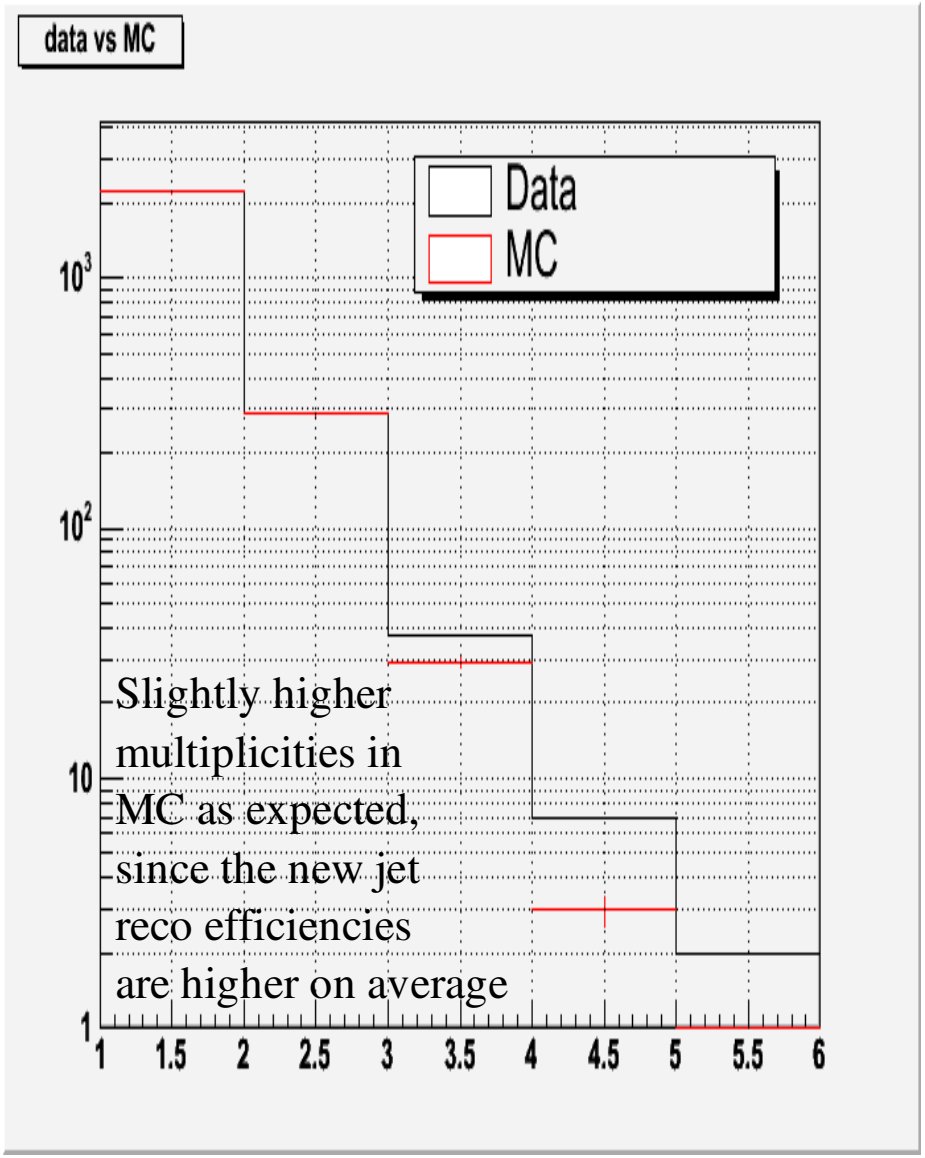

jet_pt_all
Data
p.l. MC
p_T
jet_pt_lead
Data
p.l. MC
p_T
jet_pt_second
Data
p.l. MC
p_T
jet_eta_all
Data
p.l. MC
η
jet_eta_lead
Data
p.l. MC
η
jet_eta_second
Data
p.l. MC
η

Now I'm still using the same data & MC samples as before, but I'm switching to James' new jet reco parameterization.

p0 * Erf(p1 * x + p2 * x^(1/2) + p3 * x^(1/4)

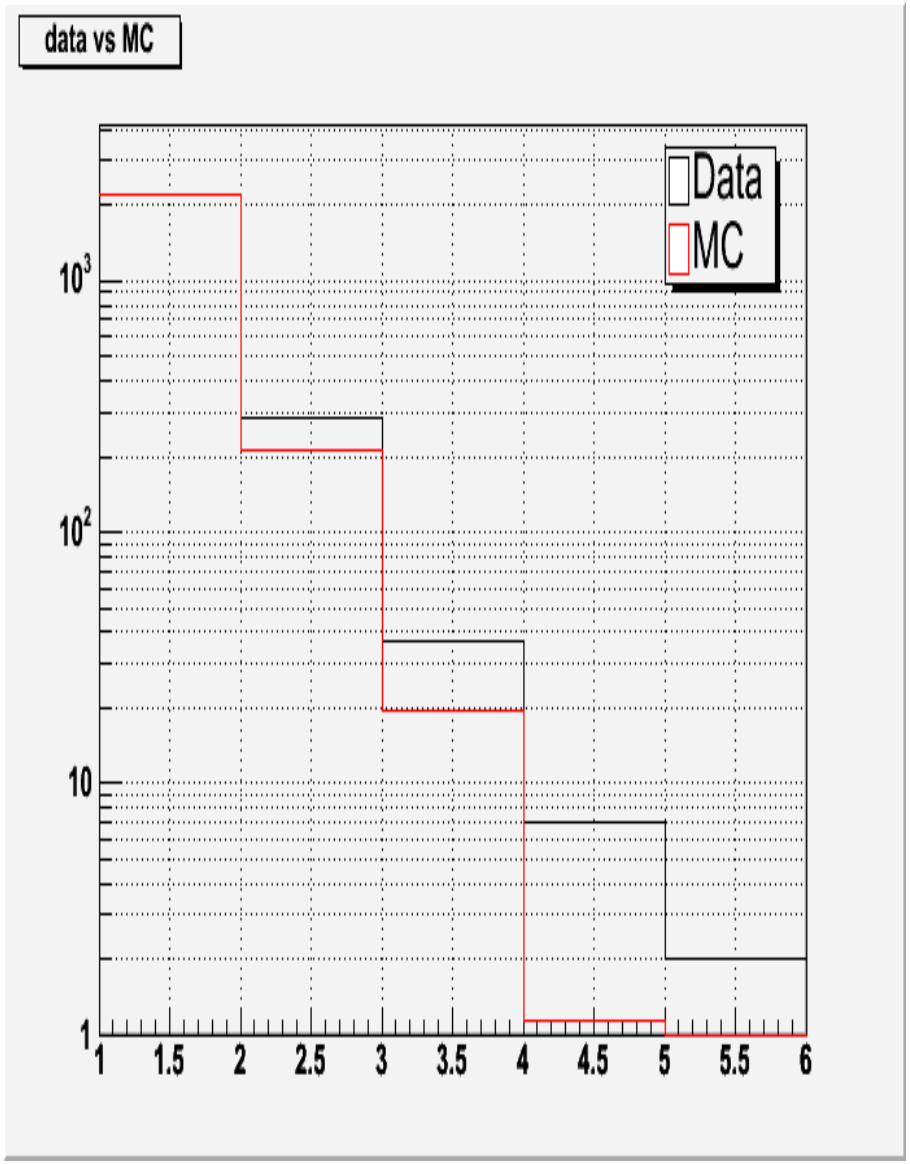
	p0	p1	p2	p3
data CC	0.981	1.623*10^-2	0.416	-0.786
data ICR	0.9016	-8.097*10^-3	0.9589	-1.648
data FWD	0.980	6.088*10^-2	-0.193	8.284*10^-2





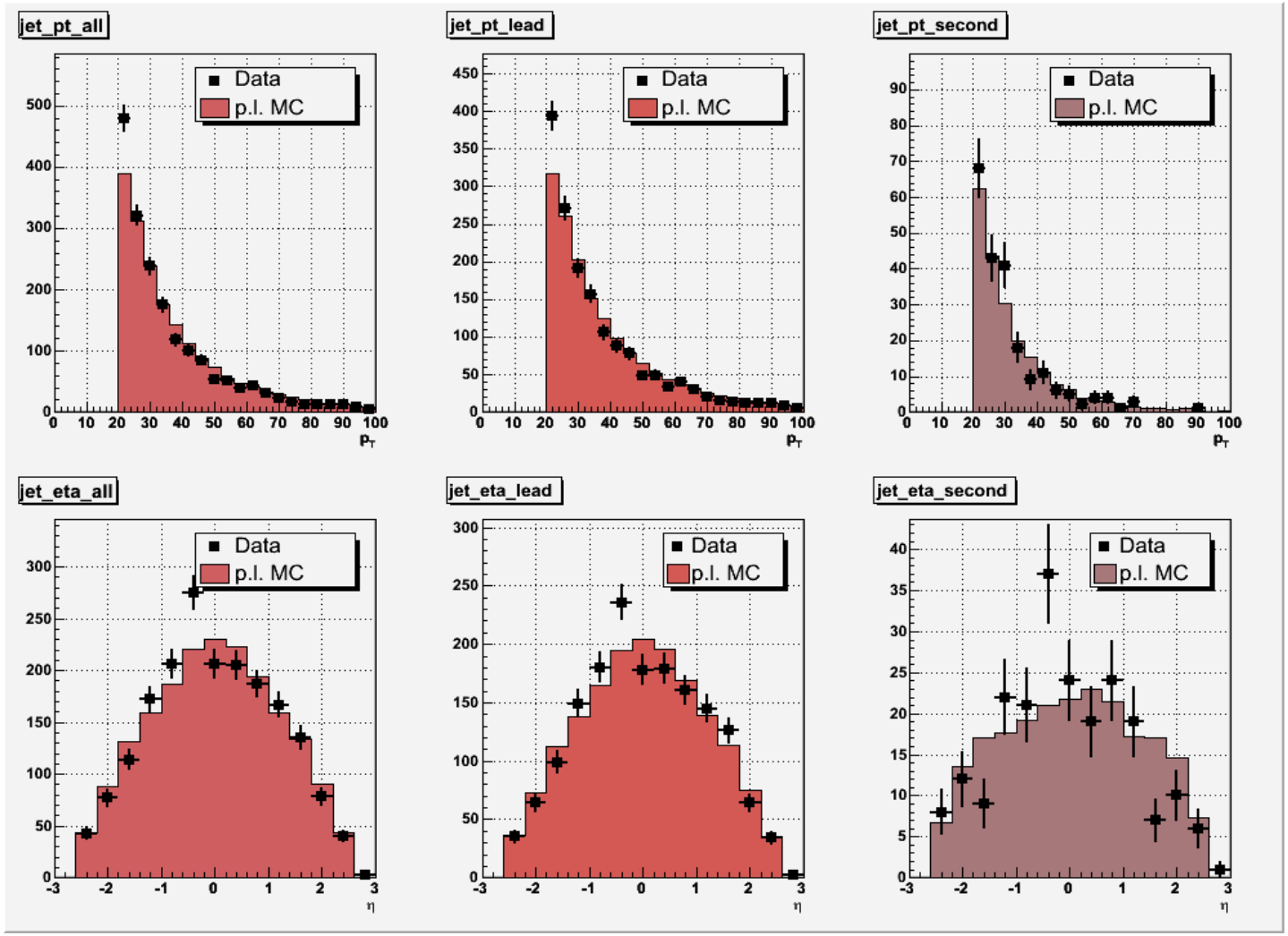
MC: Jet sample 1

Data: Jet sample 3

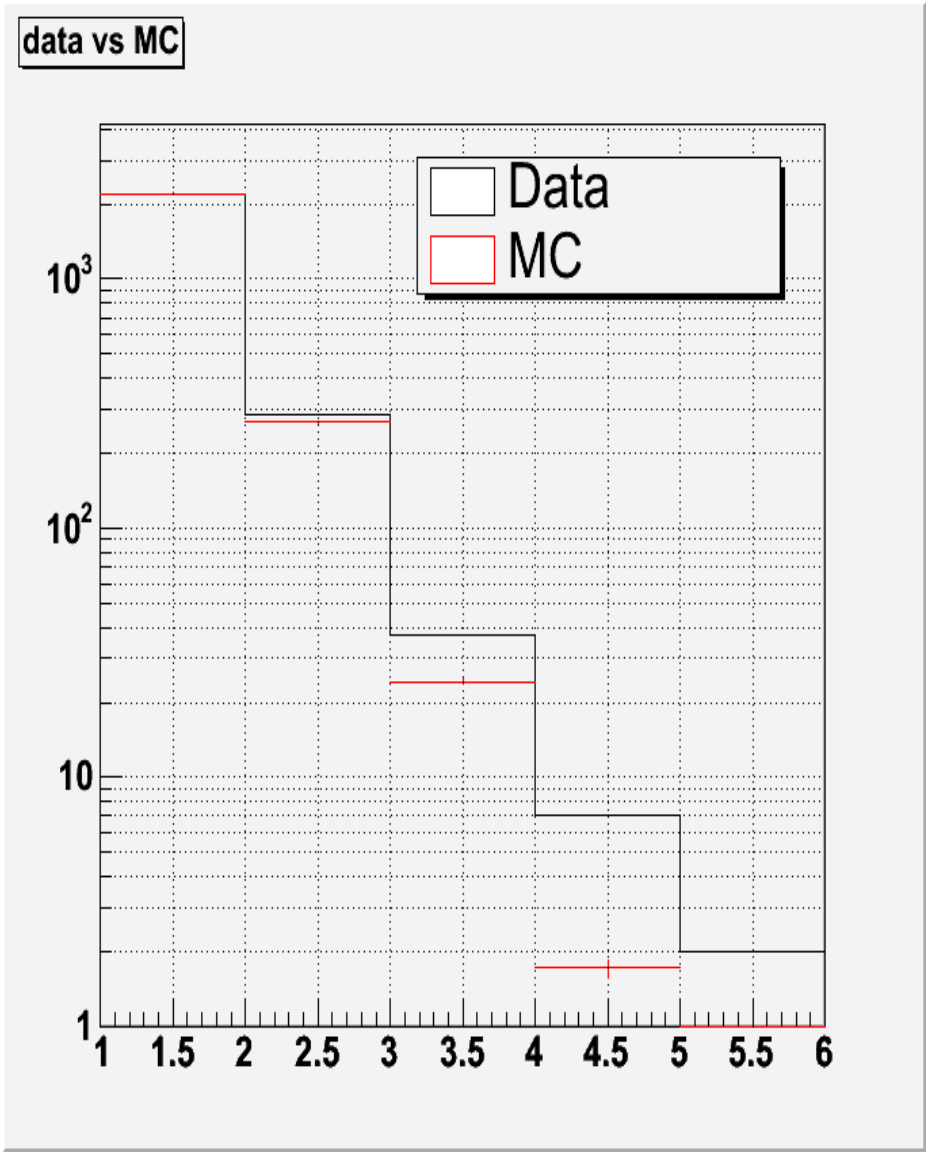


MC: Jet sample 2

Data: Jet sample 3

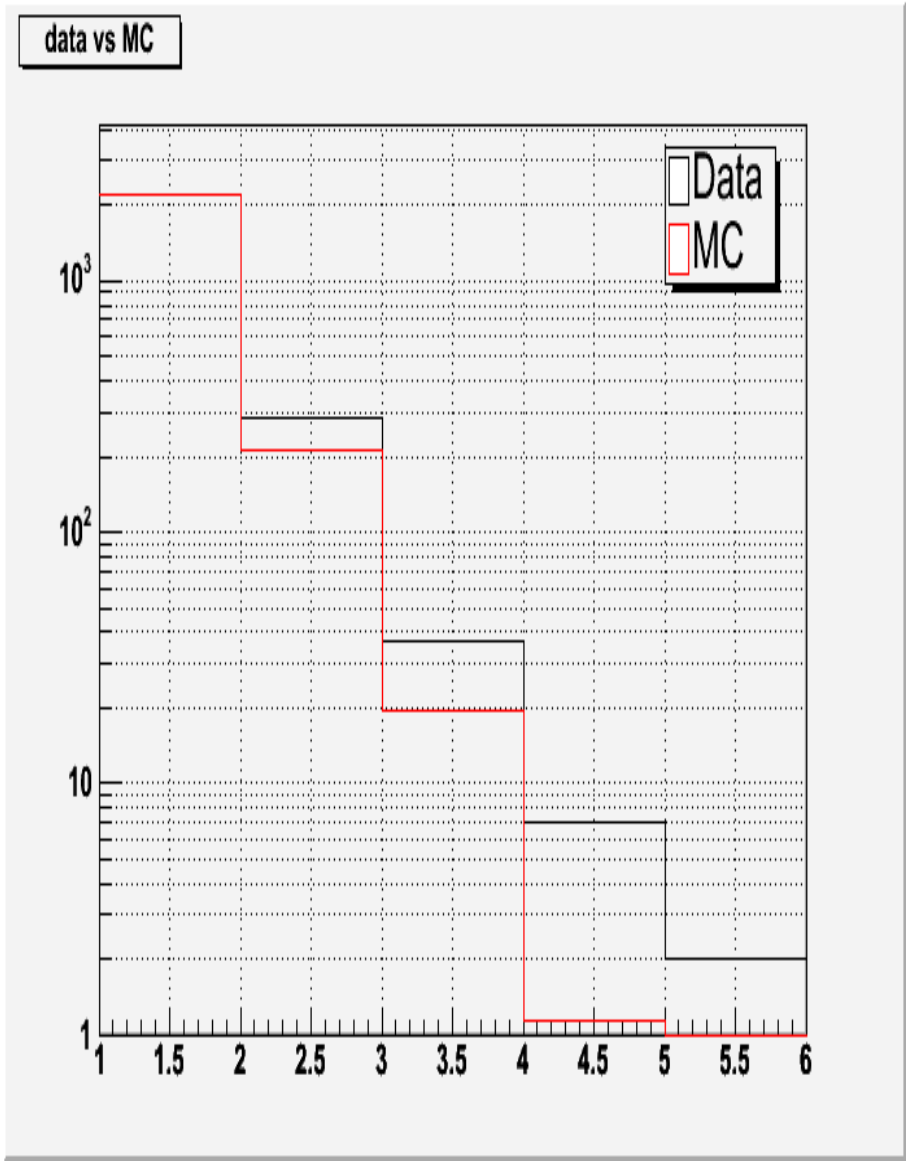

jet_pt_all
Data
p.l. MC
p_T
jet_pt_lead
Data
p.l. MC
p_T
jet_pt_second
Data
p.l. MC
p_T
jet_eta_all
Data
p.l. MC
η
jet_eta_lead
Data
p.l. MC
η
jet_eta_second
Data
p.l. MC
η

Now switching to the new higher statistics MC sample
(5 times higher statistics) that has the stable-parton-bug fixed
(using James' new jet reco parameterization).



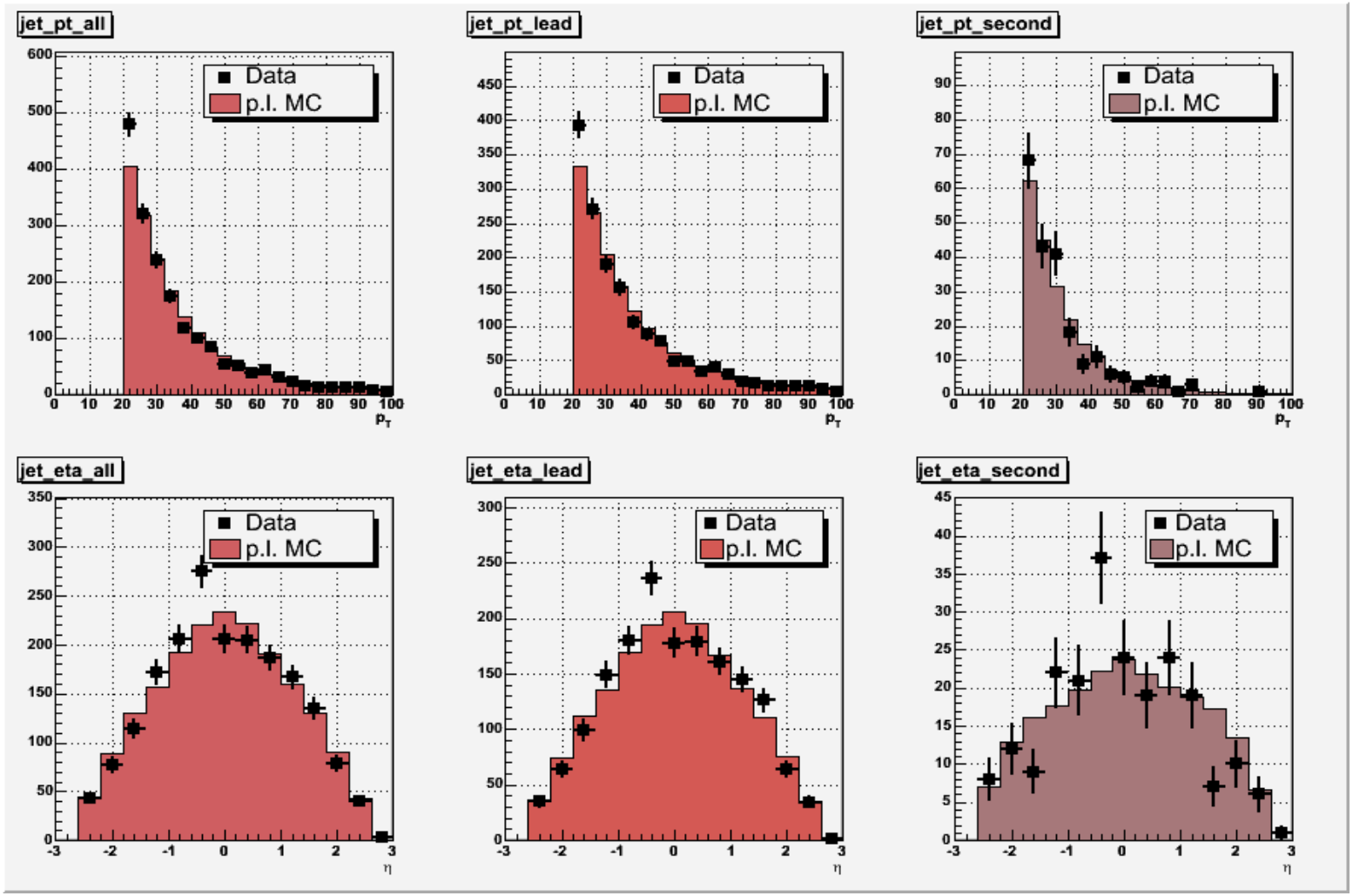
MC: Jet sample 1*

Data: Jet sample 3



MC: Jet sample 2

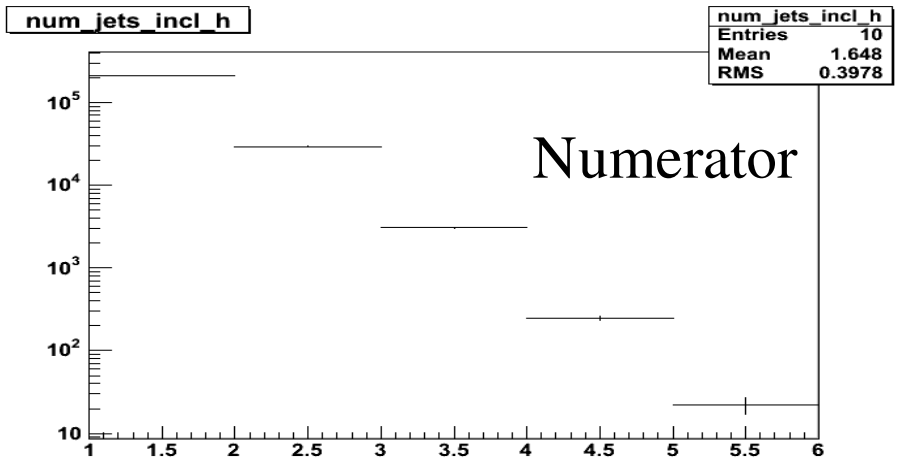
Data: Jet sample 3

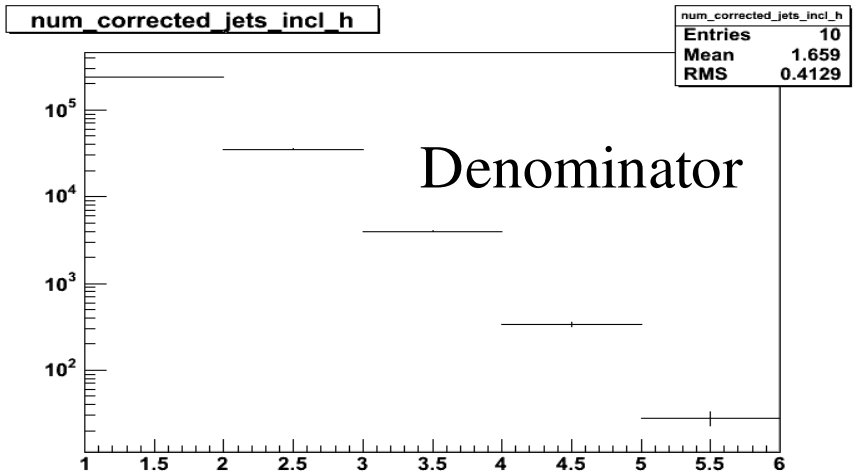

jet_pt_all
Data
p.I. MC
p_T
jet_pt_lead
Data
p.I. MC
p_T
jet_pt_second
Data
p.I. MC
p_T
jet_eta_all
Data
p.I. MC
η
jet_eta_lead
Data
p.I. MC
η
jet_eta_second
Data
p.I. MC
η

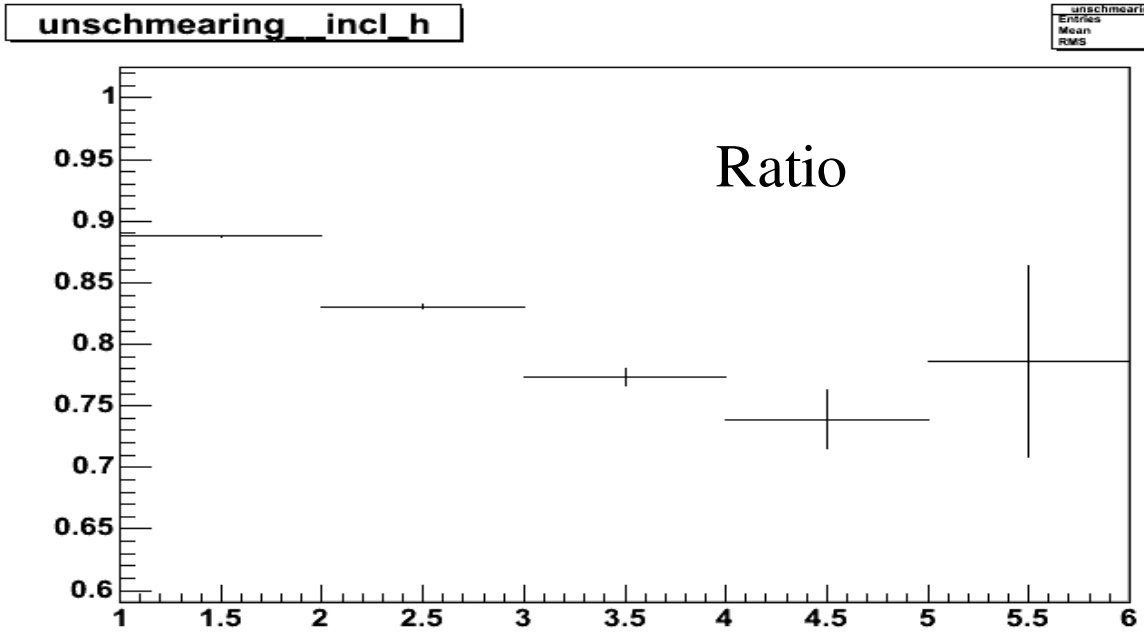
With the new MC, all bug fixes and James' latest reco efficiencies, this is how the unsmearing coefficients look like ....

$$\frac{\text{p.l. jet mult.}}{\text{smeared p.l. jet mult.}}$$

(So this is just smearing applied in the denominator!)







p.l. jet mult.

smeared & jet reco p.l. jet mult.

(This is with smearing and jet reco applied in the denominator!)